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DOE ALSO FOR NNSA, OFFICE OF SCIENCE; OFFICE EUROPEAN AND ASIAN AFFAIRS
DOE ALSO FOR OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM)
STATE FOR EUR/WE; OES; STAS; NP; AND EB/ESC
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SUBJECT: FRENCH GOVERNMENT QUIETLY PREPARES FOR 2006 NUCLEAR WASTE
DEBATE

REF: Paris 2727

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Summary

1. With little fanfare, French authorities are advancing France's waste management strategy on the political agenda. On schedule, on June 30 the National Waste Management Agency (ANDRA) and the Atomic Energy Commission (CEA) submitted to the GOF a progress report on R&D in their respective fields: deep geological repositories for ANDRA; partitioning and transmutation, packaging and long term storage for CEA. Also in June 2005, the National Scientific Evaluation Committee (CNE) released a summary report on the three options explored by France for high-level long-lived waste (HLLW) disposal. In early July, France's Nuclear Safety Authority (ASN) released on the ASN website for public consultation a preliminary version of the National Plan for Radioactive Waste Management and Recoverable Materials (NPRWM-RM). This plan will reportedly be appended to the radioactive waste management bill presented to Parliament in 2006, thus giving it a much larger scope than initially envisaged. All reports are supportive of deep geological disposal. End summary.

Background information

2. In 1991, France laid out a 15-year research program, known as the "Bataille Law," to explore three options ("lines") for HLLW disposal: line 1 - partition and transmutation of high-level nuclear waste into low-level substances; line 2 - geological storage (development of at least two underground laboratories in different underground areas-clay and granite); and line 3 - waste packaging and effects of long-term surface or subsurface storage. By 2006, the Parliament must decide which method(s) of disposal should be implemented.

3. In March 2005, the influential Parliamentary Office for the Evaluation of Science and Technology Options (OPECST) released a comprehensive scientific report on R&D progress achieved in France in the area of HLLW (reftel). The OPECST report affirmed the validity and complementarity of the three directions for research defined in the 1991 law. Its conclusions were notably based on preliminary results provided by ANDRA and CEA officials. ANDRA and CEA submitted a synthesis report to the Industry and Research Ministers on June 30.

Reporting on Fourteen Years of Scientific Progress: Four
Reports in a Row

--ANDRA REPORT

4. The ANDRA report on the feasibility of a repository for HLLW in a deep geological formation (line 2 of the law) includes two parts:
-- A feasibility-assessment report on clay formations, based notably on the work conducted on the site of the Meuse/Haute Marne Underground Laboratory (known as Bure), and in foreign research laboratories (see: http://www.andra.fr/publication/produit/D05A_266.pdf; in French); and

-- a report on the advantages of storage in granite formations based on research conducted by ANDRA in partnership with foreign laboratories http://www.andra.fr/publication/produit/D05G_267.pdf; in French).
Note: The selection process of a granite candidate site in France was never completed for political reasons (election cycle/strong local opposition to deep underground storage).

5. The ANDRA report emphasizes the "excellent confinement properties of the argillite (clays)" and confirms the suitability of the Bure site for repository development. ANDRA also details techniques developed to prevent the degradation of the waste packages in the long term and ensure reversibility of the disposal over 300 years.

-- CEA REPORT: "A Whole Combination of Solutions"

16. The CEA report focuses on lines 1 and 3 of the law. Concerning research undertaken under line 1 of the law, the CEA underscores the "remarkable progress" made in the development of processes permitting the separation of minor actinides and certain fission products. It also states that the feasibility of americium transmutation has been established, notably in fast neutron reactors. (Note: Americium is the greatest contributor to radio toxicity after plutonium.)

17. According to CEA officials, important knowledge has also been acquired in the field of long-term behavior of radioactive materials and their containment (line 3 of the law), which will be useful for both geological and surface storage. Scientific work has already led to the reduction by one-third of the production of radioactive waste at the COGEMA La Hague facility and has made it possible to reduce the volume of long-lived intermediate level wastes (LLILW) by a factor of

10. While different packaging types have been investigated, CEA researchers claim that vitrification is the most reliable and are confident that vitrified waste packages could resist decomposition during several hundred thousand years. As for long-term storage, technical solutions have been developed which demonstrate the possibility of placing the waste (spent fuel) in surface or subsurface storage installations for a period of 300 years, with the possibility to retrieve the waste, for treatment or final geological storage, at any time.

18. Comment: Difference of views between CEA and parliamentarians: The CEA concludes its report by raising the possibility of geological storage not only for HLLW but also for LLILW (e.g. cladding hulls, end caps, waste from effluent treatment) and which, according to CEA, cannot be stored subsurface. The authors of the OPECST report, Parliamentarians Birraux and Bataille, had proposed long-term storage for LLILW. Following the release of the CEA report in June, Birraux and Bataille insisted that the 1991 law refers (ONLY) to waste with the double specificity - long-life AND high activity (which excludes intermediate activity waste). Note: HLLW currently represents 1700 m3 of vitrified waste -- 110 m3 produced annually. Including LLILW in geological storage would increase drastically the volume of waste to store (46,000 m3 at the present time). End note. The question is far from being solved: CNE officials (see para 10) testified in Parliament on June 29, also expressed their view that LLILW should be stored in geological disposal. End comment.

19. The CEA report (in French only) can be consulted on the following websites: http://www.cea.fr/fr/sciences/dossier_loi1991/Synthese.pdf
http://www.cea.fr/fr/sciences/dossier_loi1991/fiche_cea_Axel.pdf
http://www.cea.fr/fr/sciences/dossier_loi1991/fiche_cea_Axe3.pdf.

-- CNE 2005 ASSESSMENT

10. Also in June 2005 the CNE, the national panel overseeing French research waste management, released its eleventh evaluation concerning France's R&D on radioactive waste management. The CNE evaluation, based on preliminary reports by the two agencies, provides a summary of all the results achieved so far on lines 1, 2, and 3 of the 1991 law. The detailed report, also including a summary and conclusions in English, can be consulted on the following website:
<http://lesrapports.ladocumentationfrancaise.fr/BRP/054000461/0000.pdf>.)

11. CNE conclusions: Line 1/partitioning: The CNE confirms its previous assessment that French research has been innovative and that significant scientific progress has been made. It notes, however, that (CEA) work on demonstrating advanced partitioning technical feasibility is late according to the schedule contained in the 1991 law and that only partial results will be available at the end of 2005. The CNE concludes that advanced partitioning experiments should be continued after 2006 to gradually reach a demonstration of industrial-like feasibility.

12. Line 1/Transmutation: A "hope." Transmutation still has a long way to go since the research now depends on equipment which is only at the concept stage, whether as part of the generation IV reactor systems or Accelerator Driven Systems (ADS). CNE officials further add that "in 2006 there will be no decisive argument permitting scientific, technical, and industrial decisions on transmutation but only hopes in relation to these different concepts."

13. Line 2/Deep geological disposal: The CNE notes that "the advancement of line 2 research is well above the one in line 1." It confirms its previous favorable assessment on research conducted on the Bure site: "the confinement qualities of the (...) argillite (clays) are supported by the last observations in situ, in the laboratory, and by the results obtained on the core samples taken in the geological layers at the Bure site. The results of the first experiments and measurements in the laboratory will be available end 2005 as planned."

14. Line 3/Waste conditioning: The CNE considers that "research in line 3 that leads to the development of primary industrial waste packages has taken this technology to maturity.... The short or long term behaviors of waste and spent fuel packages in various situations has been reasonably well established.... However, it is necessary to continue the research to consolidate certain results, particularly on the resistance of some glass materials and on the confinement possibilities offered by ceramics, in order to possess a wide selection of conditioning means to confine long-lived radionuclides on the long term."

15. Line 3/Long-term storage of primary waste packages: "Research conducted within line 3 of the law is not completed, except for the industrial storage of present reprocessing waste. The current programs on storage and disposal containers must be continued. In order to go further than generic studies on long-term storage facilities, it would be suitable to select a potential storage site." The CNE further emphasizes the burden of this type of storage upon future generations.

-- ASN REPORT: Working Towards More Integrated Approach and Social Acceptance

16. Giving larger scope to the 2006 legislation: The debate on waste management will not be limited to HLLW. For two years, the Nuclear Safety Authority (ASN) has been working on other types of radioactive waste whose levels are much lower but volumes much more significant (see reftel and para 21). The resulting document, the National Plan for Radioactive Waste Management and Recoverable Materials (NPRWM-RM), is a comprehensive summary of existing data and expertise in the field, and discusses a large range of issues related to waste management responsibility, funding, inventory problems, and the "necessary information" for the public. The objective of the NPRWM-RM is to ensure the coherence of the French waste management scheme, whatever the nature of the radioactive waste and its producer, to look for management solutions for each category of waste, also taking into account the concerns of the public. The last part of the report includes a series of recommendations that are likely to become part of the draft bill. (The ASN released on July 13 a preliminary version of NPRWM-RM for public consultation and comments on the ASN website (www.asn.gouv.fr/domaines/dechetsnuc/PNGDRMV.pdf).

Agenda Confirmed

17. At the request of the Industry and Research Ministries, the ANDRA and CEA reports will now be officially assessed by CNE and ASN, and reviewed by a panel of international experts under the aegis of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development. CNE will publish a global assessment report in January 2006 before the completion of the draft bill and its discussion in Parliament (first semester 2006). Prior to the parliamentary discussion, the GOF also confirmed the launch of a public debate (modalities unknown) for this fall.

Comment

18. Avoiding the 'NIMEY' ('Not in My Election Year') phenomenon: 2006 will be an important year for radioactive waste management in France. Fifteen years after the Bataille law, and even though Research Minister Francois Goulard and Industry Minister Francois Loos both acknowledge the need for "another ten years of research in the area," stakeholders and politicians across the political board feel the need to legislate on the issue well before the beginning of the 2007 presidential campaign. The shared opinion is that the parliamentary debate should not be postponed until 2008, and not take place in 2007 to avoid being "hijacked" by political parties in the context of the elections.

19. According to EST contacts, it is unlikely that Parliament will explicitly give a green light to the construction of a repository at Bure in 2006. However, considering ASN and CNE support, the Parliament could well give an agreement "in principle" to a geological disposal solution. While the Industry Minister recently emphasized that no "administrative decision" would be taken in 2006, he nevertheless indirectly confirmed the OPECST proposed calendar, i.e. possible authorization to create a (reversible) deep geologic repository by 2015 and implementation of geological storage by 2025.

French Waste: Statistics

20. At end 2002, according to ANDRA (2004 Activity Report released June 2005) the total volume of waste present in France and placed under French supervision amounted to 929,000 m³, broken down as follows:

High level waste: 0.2 percent
Intermediary level/long lived: 4.6 percent
Low level/long lived: 4.6 percent
Very low level: 11.1 percent
Low or intermediary level/short lived: 79.5 percent

Origins of radioactive waste in 2020 (in volume):

Nuclear power: 68.7 percent
Research: 17.8 percent
Defense: 10.6 percent
Non-nuclear power industry: 2.9 percent

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